January - February 1990

FAA Aviation NEWS

A DOT / FAA FLIGHT STANDARDS SAFETY PUBLICATION

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U.S. Department of Transportation
Federal Aviation Administration

FAA Aviation NEWS

January/February 1990
Volume 29, Number 1

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FAA AVIATION NEWS is published by Flight Standards' Accident Prevention Program Branch, AFS-20, Federal Aviation Administration, Department of Transportation, Washington, DC 20591, in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory, and procedural matters affecting the safe operation of aircraft. Use of funds for printing FAA AVIATION NEWS was approved by the Office of Management and Budget. All printed materials contained herein are advisory or informational in nature and should not be construed as having regulatory effect. The FAA does not officially endorse any goods, services, materials, or products of manufacturers that may be mentioned. **Certain details of accidents described herein are altered to protect the privacy of those involved.**

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BRIEFS

CLEAN HOUSE! Unstowed equipment in the cabin of a DeHavilland Beaver was blamed for the pilot's death by drowning when the float-equipped aircraft impacted a lake and sank recently. Investigators found that the pilot had released his seat belt after impact but apparently became entangled in a maze of mooring ropes and other assorted gear, which prevented him from exiting the aircraft. A few minutes of orderly housekeeping in your aircraft before takeoff could save your life in an emergency.

THAT OLD DEVIL SNOW. Every winter there are disorientation accidents following flight into snow-induced white-out conditions. Flat, barren terrain or frozen lakes are to be avoided at low altitude when covered with snow, as unimpeded winds can cause sudden loss of visual reference, due to swirling snowflakes. Pilots should anticipate the need to go on instruments immediately, during takeoff or landing. The Great Plains areas of the United States, the Northwest Territories of Canada, and the high arctic regions are particularly susceptible.

FAST ICE. Air Force studies have shown that the rate of ice build-up on an airfoil can be much more rapid than most pilots imagine. In some cases two to three inches of ice have been deposited within five minutes. As little as half an inch of ice can reduce the aircraft's lifting power by 50 percent. Other performance characteristics may be affected unpredictably and flutter could be induced.

Ice on aircraft can also affect the horizontal stabilizer, which is designed to balance both aerodynamic forces and the center of balance location. Most aircraft are not certificated to be flown in known icing conditions. Even those which are so certificated can be overwhelmed by heavy icing. Icing conditions can usually be avoided by careful flight planning. If encountered unexpectedly, the area should be departed as quickly as possible.

COMPUTERIZED TESTS. FAA written airman examinations for Private and Commercial Pilot certificates and the Instrument rating may now be taken at any of the 64 commercial computer-testing centers. For costs and location, call 800-446-9554.

"BACK TO BASICS II"

by Gary D. Koch, Sr.
National Coordinator Accident Prevention Program

The "BACK TO BASICS" campaign commenced in January 1986 and was actively promoted by the Accident Prevention Program for three years, emphasizing four topics per year. These topics addressed well-defined aviation activities that were involved in aircraft accidents.

In 1986 topics included: Takeoff and Landing, Weather, Fuel management, and Collision avoidance.

1987 topics included: Pilot decision making, Aeromedical factors, In-flight emergencies, and Weather briefing and flight planning.

1988 topics included: Preflight activities, Aircraft maintenance, Stall/spin avoidance, and Pilot-ATC communications.

Accident Prevention Specialists throughout the country, including over 3000 Volunteer Accident Prevention Counselors, conducted over 27,000 safety seminars attended by over 1.2 million people. Over 12,500 pilot counsels were conducted, 41,700 proficiency/courtesy flights accomplished and over 23,000 pilot proficiency wings were awarded.

We believe the "BACK TO BASICS" campaign was successful in improving the general aviation safety record. Total number of accidents in CY 1986 numbered 2582, compared to 2357 in CY 1988. A reduction of 225 accidents equating to an 8% decrease in total accidents. Total fatal accidents in CY 1986 numbered 473, compared to 450 in CY 1988. The reduction of 23 fatal accidents equated to a 4% decrease in fatal accidents. Fatalities dropped from a total of 965 in CY 1986, to 796 in CY 1988, 169 fewer fatalities equating to a 17% reduction.

The ultimate purpose of the "BACK TO BASICS II" program is to further improve aviation safety by reducing the number of general aviation aircraft accidents caused by inappropriate operator decision and procedural errors, both on the ground and in the air. Intermediate goals include a multi-thrust joint effort by the aviation industry and the FAA to develop new dynamic techniques and training aids to enhance the capability of the FAA Accident Prevention Program sufficiently to further reduce the general aviation accident rate, and to foster aviation by promoting more active participation in the Accident Prevention Program.

The major thrust of the "BACK TO BASICS II" campaign will be through the FAA Accident Prevention Program's aviation safety seminars. Where possible, special program material tailored specifically for each 6 month safety emphasis will be prepared, packaged, and distributed to each accident prevention specialist. In addition, the pilot community will be alerted to each 6 month campaign through coordinated announcements, relevant editorials, or technical articles to be presented in popular general aviation newsletters and periodicals. "BACK TO BASICS II" officially began on January 1, 1990, as a five year plan.

The first six months of 1990 will feature Aircraft Icing, Pilot Disorientation, and Basic Airworthiness Management. The second six months will emphasize Takeoffs, Landings, and Airworthiness Management, Part I.

The following topics will be featured in the coming years:

1991— "Human Factors"
"Repair Station Management"
"Airspace"
"Airworthiness, Part 135"
1992— "Communications"
"Airworthiness, large aircraft"
"Navigation Update"
"Master Mechanic Program"
1993— "Weather"
"Annuals and 100 Hours"
"Aeromedical Factors"
"Maintenance Paperwork"
1994— "Fuel Management"
"Fuel System Maintenance"
"Decision Making"
"Pilot Maintenance"

The goal of "BACK TO BASICS II" will be to reduce the number of general aviation fatalities by 5% from the previous calendar year's totals. The program will continue for a period of 5 years, with adjustments being made as performance and indicators dictate.

The overall goal would be a 25% reduction of the total number of fatalities over the five year period, 1990-1994. Base line will be computed on the CY 1989 total number of general aviation fatalities.

The success of "BACK TO BASICS II" will depend on strong cooperative efforts between FAA and the aviation industry. All pilots, mechanics, fixed base operators, airport managers, flight schools, and the numerous aviation organizations, will play a vital role in assuring a dynamic and successful.

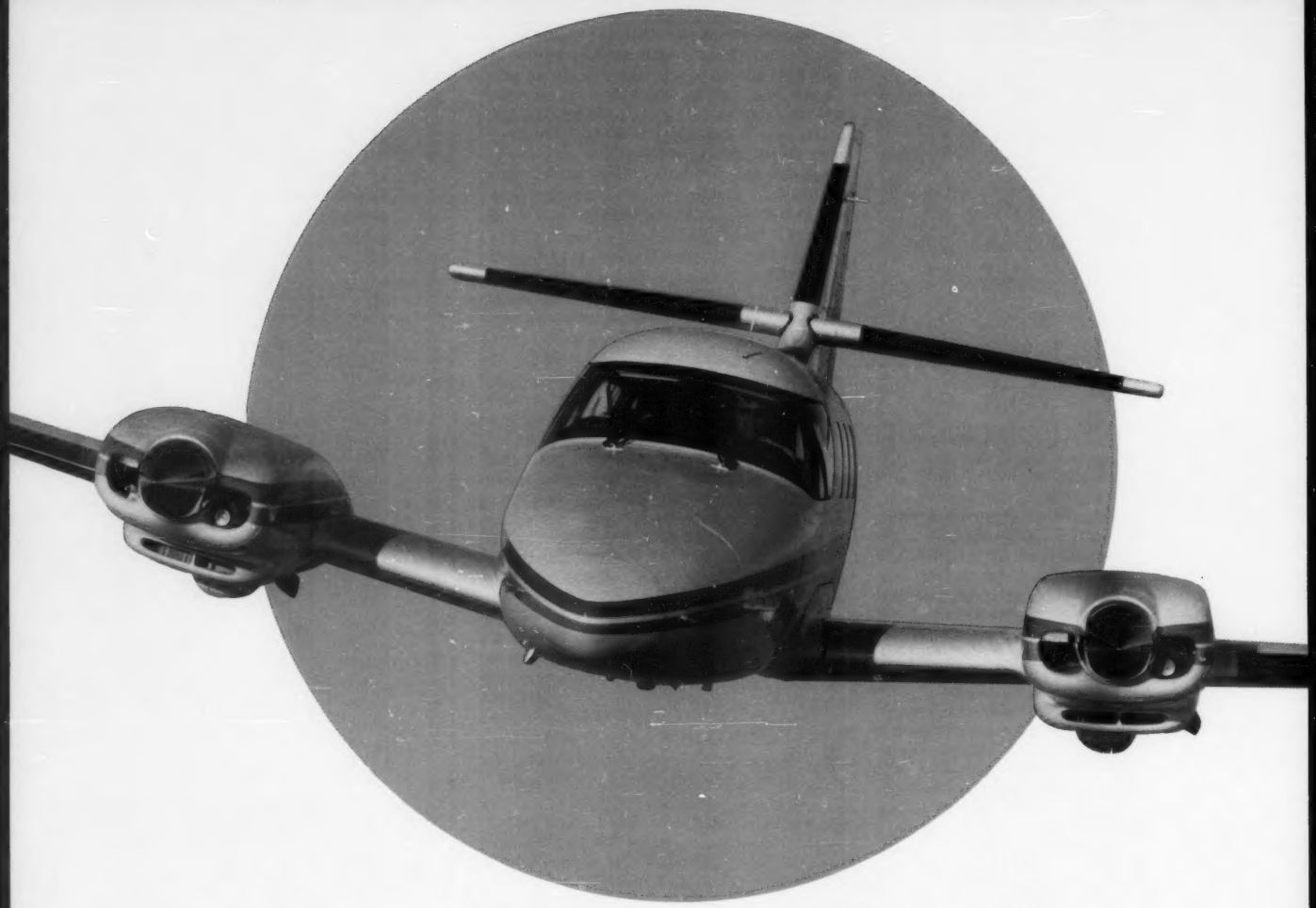
Contact your local Accident Prevention Specialist, at the nearest Flight Standards District Office, for more information on future "BACK TO BASICS II" program activities. Lets all educate, persuade, and motivate our general aviation community to adopt positive safety practices and procedures that will reduce the general aviation accident rate.

Lets all go "Back to the Basics" and strive for that 25% reduction in fatalities, by '95! ■

Editor's Note: In 1967 an experimental program was launched by the Flight Standards Office in FAA's Southwest and Central Regions, to discover whether identifying certain inspectors as essentially counselors (rather than law enforcers) would have a positive effect on accident reduction. The results, after a two-year trial period, were unquestionably positive, and the National Accidental Prevention Program was born.

The staff is made up of one inspector from each of the over 80 district offices, designated the Accidental Prevention Specialist, plus one Coordinator from each FAA region and a managerial staff at FAA's Washington, D.C. headquarters.

The Program operates by (1) providing pilots throughout the nation with a "one on one" opportunity to discuss flying problems with these specialists, (2) putting on or helping to sponsor pilot and mechanic no-cost safety seminars, (3) distributing printed educational information on a broad variety of flight activities, and (4) encouraging voluntary refresher training.



Passing the Word

The Importance of Ensuring 100% Accuracy in Radio Transmissions

In aviation the radio is a kind of party-line system, in which there is considerable demand by users (pilots) to contact the operator (FAA's Air Traffic Service) and considerable pressure on the operator to keep the exchanges of information flowing rapidly and accurately. If the "exchange rate" is too slow, traffic may be delayed; if it is speeded up too much, messages may be garbled and misunderstood, setting the stage for potential midair collisions.

In recent years approximately 3,000 "pilot deviation" incidents have been recorded annually. A pilot deviation is an incident wherein an aircraft under ATC guidance disregards airspace regulations, or fails to comply with an assigned vector or altitude.

Some of these incidents are the result of a pilot ignoring rules, or of pilot error in controlling the aircraft, but many result from pilot radio transmission misunderstandings or controller operational errors—which include failure to spot an error in a pilot's readback of a clearance, as well as misunderstanding a pilot's communication.

Accuracy in transmitting information between pilots and controllers is in the best interests of FAA *and* the airman. Operational errors may require FAA to investigate the circumstances and relieve the specialist (controller or FSS personnel) from duty—possibily to be retrained and recertified before resuming his or her job. For the pilots, of course, a near midair incident can be a brush with disaster.

If there is one single act by which pilots can reduce radio misunderstandings, it is that of reading back clearances, vectors, assigned frequencies, and altitude assignments. No matter how busy the frequency may be, or how rapid-fire the clearance transmission, the information should be read back clearly and distinctly. Comparing the readback with the clearance is the only means the ATC specialist has of knowing that it has been received correctly, and by the intended aircraft (apart from monitoring the aircraft's altitude encoding transponder, when practical). Note that all readbacks should begin with the aircraft identification, exactly as given by the controller.

Pilots who feel they are helping Air Traffic Service by not taking up busy frequency time with a read back are misleading themselves and possibly contributing to a hazardous situation.

Even if the controller moves on to address another aircraft before you start your readback, you should wait for an opportunity to break in, identify your aircraft and read back your clearance.

If you have trouble understanding the controller because he or she is talking too fast for you, or the reception is poor, *say so*. Be wary of guessing about numbers that sound alike. A definite pattern of communication problems has been identified with altitude usage of certain numbers such as ten and eleven. For example, there

is a tendency to confuse these numbers when used with restrictions like "10 DME at 11,000," or "11 DME at 10,000." Be especially careful about similar numbers.

Other practices that may interfere with the accuracy of radio transmissions include:

- *Cockpit background chatter.* (Ask passengers to keep voices down, if necessary.)
- *Poor mike techniques.* Holding mike too far from mouth, or turning head away when talking. (A headset is the best solution.)
- *Excessively clipped transmission.*
- *Non-standard phraseology.* Such as CB jargon.
- *Non-stop transmissions.* Such as issuing control clearances for several aircraft without allowing time for identification or acknowledgements.
- *Poor anticipation.* Some pilots are often not prepared to write down a clearance. They may assume they will be cleared as filed, or that they can remember the message without putting it down on paper.
- *Distractions.* Pilots who are busy manipulating flight controls cannot give full attention to radio work. Some pilots may be simply not experienced or proficient enough to handle IFR in poor weather single-handedly. Even when there are two pilots, radio responsibility should be clearly designated, or portions of a message may be lost or mistaken. Some pilots get bored with the frequent radio chatter, and allow themselves to mentally tune it out. This could lead to missing an important message. Lack of pilot response to an ATC transmission will delay traffic, at least, and at worst may result in an unsafe condition.
- *"Hurry up talk."* Controller injudicious use of such words as, "expedite" or "immediately." These carry a strong sense of urgency or emergency, which may not be justified, and could provoke a pilot error.

On the positive side, some pilots make it a practice, while waiting for a chance to transmit, to listen for—and report—any contradiction between a controller's clearance and a pilot readback. In a busy airspace, helpful actions such as these are very welcome. Mistakes do happen, but they are less likely to hurt us if we look out or one another.

Surprisingly, aircraft call letters and numbers can easily get mixed up in radio transmissions, as a result of variances in pronunciation. The letters "M" and "N" for example, sound much alike in a certain context. "T"s resemble "P"s or even "D"s, etc.

For this reason, a universal system of phonetic symbols has been developed, which is commonly used by air traffic personnel. It should also be used and understood by all pilots who operate or may operate in a radio environment. Most pilots learn this system at the outset of their flying career, but if much of their flying is not done at controlled airports they may become rusty. One effective means of staying sharp is to put the phonetic characters on a set of flash cards and keep them where they may be conveniently reviewed during waiting periods.

Another means of helping FAA to understand and cope with problems in the system is to report any experience or observation with regard to improper traffic separation to the Aviation Safety Reporting System Office (ASRS). This is an office administered by NASA (National Aeronautics and Space Administration) under a joint agreement with FAA's Aviation Safety Reporting Program. NASA will "de-identify" the reporter before passing the report on to FAA. When warranted by the statistical evidence, changes may be made in procedures or rules.

All persons using the airspace—pilots, controllers, passengers, airport operations, etc.—are encouraged to obtain the official reporting forms from the Aviation Safety Reporting System, P.O. Box 189, Moffet Field, CA 94035, or from local FAA Flight Standards District Offices. The program and a sample form are explained in an FAA Advisory Circular (AC 00-46C), available free from DOT Publications, M-443.2, Washington, DC 20590.

Many pilots emerge from a potentially hazardous flight situation with a desire to warn others or complain to authorities, but are concerned about revealing their own involvement, lest it lead to enforcement action by FAR. For example, a pilot may experience a near-collision incident while flying in the traffic pattern of a controlled airport. He doesn't understand what went wrong, but he is afraid that if he queries the tower he may be cited for non-compliance with a regulation. So he keeps quiet, allowing the problem to persist, and perhaps endanger his and other aircraft.

His concern is erroneous on several counts. To begin with, the incident may be reported by persons in the other aircraft or on the ground, in which case FAA would be obliged to investigate, and it is possible that enforcement action would be taken. However, if any pilot involved reports the incident to the Aviation Safety Reporting System within 10 days, even if an FAA Inspector learns of the incident independently and does investigate, the inspector is not likely to recommend a violation unless there is evidence of clear intent to evade a rule.

Someday in the not too distance future, it will be possible for ATC transmissions to be radioed discreetly to individual aircraft, and to display ATC clearance for a specific aircraft on its cockpit screen. In other words, each aircraft will have its private line. But most of us will have to wait until the beginning of the next century before this service is available. In the meantime the party line system will continue to provide us with safe separation as long as we are all as helpful and cooperative as possible.

THE PHONETIC ALPHABET

CHARACTER		PRONUNCIATION
A	Alfa	(AL-FAH)
B	Bravo	(BRAH-VOH)
C	Charlie	(CHAR-LEE) or (SHAR-LEE)
D	Delta	(DELL-TAH)
E	Echo	(ECK-OH)
F	Foxtrot	(FOKS-TROT)
G	Golf	(GOLF)
H	Hotel	(HOH-TEL)
I	India	(IN-DEE-AH)
J	Juliett	(JEW-LEE-ETT)
K	Kilo	(KEE-LOH)
L	Limo	(LEE-MAH)
M	Mike	(MIKE)
N	November	(NO-VEM-BER)
O	Oscar	(OSS-CAH)
P	Papa	(PAH-PAH)
Q	Quebec	(KEH-BECK)
R	Romeo	(ROW-ME-OH)
S	Sierra	(SEE-AIR-RAH)
T	Tango	(TANG-GO)
U	Uniform	(YOU-NEE-FORM) or (OO-NEE-FORM)
V	Victor	(VIK-TAH)
W	Whiskey	(WISS-KEY)
X	Xray	(ECKS-RAY)
Y	Yankee	(YANG-KEY)
Z	Zulu	(ZOO-LOO)
1	One	(WUN)
2	Two	(TOO)
3	Three	(TREE)
4	Four	(FOW-ER)
5	Five	(FIFE)
6	Six	(SIX)
7	Seven	(SEV-EN)
8	Eight	(AIT)
9	Nine	(NIN-ER)
0	Zero	(ZEE-RO)

Communicating Without Radio

Air to ground radio communications have been an important part of aviation for nearly 75 years now, resulting in vast benefits as regards orderly traffic flow, assistance to lost pilots and emergency aid during equipment failures. Nevertheless, despite the greatly sophisticated current state of the art, aircraft accidents continue to occur which are caused in part or mainly by some kind of communications breakdown.

Sometimes the failure initiates in the radio equipment itself, as a pilot experiences transceiver and/or receiver failure in flight and attempts to land at a tower controlled airport. This is a comparatively rare, although potentially serious, occurrence—which is probably why some airmen find themselves rusty on the technique of communicating by means of non-radio signals.

One particularly hazardous situation is the progressive loss of radio contact while preparing to land. A typical accident of this kind occurred in June of 1986 at a tower controlled airport in Florida, when the pilot of a 172 retractable found that his electrical charging system was inoperative, shortly after takeoff. He shut down all unnecessary electrical equipment and returned to the airport. According to the National Transportation Safety Board, as the pilot entered the airport traffic patterns he heard the tower, in a broken up transmission, asking the 172RG pilot to rock his wings to establish N number identification. He did so, and was cleared to land.

However, during the 172's approach in the pattern, tower controllers observed that the landing gear were not fully extended. Local control then advised the pilot of their observation and instructed the pilot not to land. This transmission was not received in the Cessna.

The pilot was aware of possible trouble with the landing gear. Although he could see the gear on the left side of the aircraft, as he circled into a right hand base, the green light on the panel did not appear and he was not certain as to whether the right gear was fully extended or whether the gear light was inoperative. He used his radio to transmit a message to the tower, asking whether they could see any problem with his landing gear, while he circled the field and prepared to land. Receiving no warning reply, he landed the airplane. The gear collapsed and the aircraft slid off the runway, resulting in substantial damage, but no fire or injury.

In his statement to the NTSB investigators, the pilot acknowledged that he had become unduly concerned about the electrical failure and the smell of burning rubber. Consequently, he had not taken time to attempt to pump down the gear by hand before landing. Furthermore, in his haste to land he had apparently forgotten that he could no longer transmit, or that his receiver could also have become inoperative. Without confirmation of landing gear securely in place it would have been prudent to await a light signal from the tower before putting the airplane down.

Many of us have become so accustomed to the convenience and reliability of electronic communications that we forget about back-up systems and their appropriate use. The recommended procedures for tower communications when the aircraft transmitter and/or receiver fail, as given in the Airman's Information Manual (Paragraph 205) should be reviewed frequently.

ATC Light Gun Signals

	MEANING		
COLOR AND TYPE OF SIGNAL	MOVEMENT OF VEHICLES EQUIPMENT AND PERSONNEL	AIRCRAFT ON THE GROUND	AIRCRAFT IN FLIGHT
Steady green	Cleared to cross, proceed or go	Cleared for takeoff	Cleared to land
Flashing green	Not applicable	Cleared for taxi	Return for landing (to be followed by steady green at the proper time)
Steady red	STOP	STOP	Give way to other aircraft and continue circling
Flashing red	Clear the taxiway/runway	Taxi clear of the runway in use	Airport unsafe, do not land
Flashing white	Return to starting point on airport	Return to starting point on airport	Not applicable
Alternating red and green	Exercise extreme caution	Exercise extreme caution	Exercise extreme caution

THE PROPOSED AIRSPACE RECLASSIFICATION

A New Overall Concept as Simple as A, B, C.

As part of a world-wide effort to simplify and standardize airspace regulations, thereby improving the safety and convenience of flying, FAA is proposing to reclassify the entire U.S. airspace. Overlapping and unnecessary current configurations would be eliminated by the proposed rule, which would separate the airspace into six basic categories: A, B, C, D, E, and G. These categories are in line with recommendations of the International Civil Aeronautical Organization (ICAO). An additional class, Airspace F, which was also recommended by ICAO, is not in the FAA proposal.

For the most part, currently existing airspace regulations would not be changed. The few changes envisioned would reduce *distance from clouds* minimums for VFR flight in a TCA, and require two-way radio for all aircraft in the vicinity of an airport with an operating control tower. Control zones and Airport Traffic Areas would merge.

NOTE: **Special Use Airspace** (SUA) would not be affected by this reclassification. SUA includes airspace designated for military training purposes, such as Military Training Areas and Restricted Areas, as well as Prohibited Areas established for reasons of national security.

All other existing airspace designations would be re-named according to the following alphabetical categories:

- **Positive Control Airspace** (PCA) would become **Class A Airspace.** PCA is generally the airspace from 18,000' MSL up to 60,000' MSL (with certain differences in Alaska and a few Pacific islands). In this airspace all operations must be conducted under instrument flight rules, and are subject to ATC clearances and instructions. Full Air Traffic Control service is provided. *No changes are proposed when this type of airspace becomes Class A Airspace.*
- **Terminal Control Areas** (TCA) would become **Class B Airspace.** A TCA is controlled airspace around the most heavily trafficked airports (and their satellites), extending from the surface or higher to specified altitudes, as indicated on appropriate charts. VFR as well as IFR operations may be conducted; all are subject to ATC clearance and instructions. ATC separation service is provided for all traffic. All aircraft are provided full Air Traffic services.

Additionally, *when a TCA becomes Class B Airspace, the required distance from clouds minimums for VFR flight would be reduced from 2,000 feet horizontally, 1,000 feet above, and 500 feet below to "clear of clouds." The visibility minimum would remain at least three miles.*

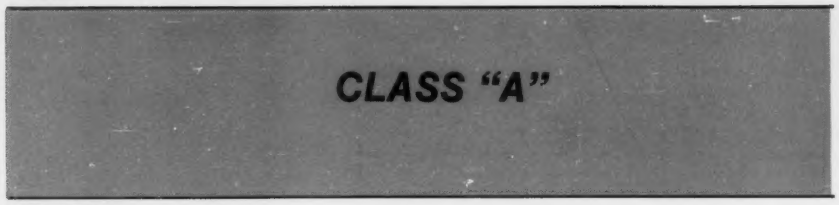
- **Airspace Radar Service Areas** (ARSA) would become **Class C Airspace.** An ARSA consists of controlled airspace around a tower controlled airport, extending upward from the surface or higher to specified altitudes, according to the configurations shown on charts.

In this airspace both IFR and VFR operations are permitted. IFR aircraft are subject to Air Traffic Control clearances and instructions. VFR traffic must establish two-way radio communications with Air Traffic Control. ATC traffic separation is provided to IFR aircraft, and to VFR aircraft when necessary to avoid potential IFR/VFR conflicts. All VFR aircraft receive traffic advisories and, upon request, conflict resolution instructions.

No changes in operational requirements are proposed for this type of airspace. VFR visibility minimums are three miles. Minimum distance from clouds is 2,000 feet horizontally, 1,000 feet above and 500 feet below.

Proposed Airspace Reclassification

FL 600

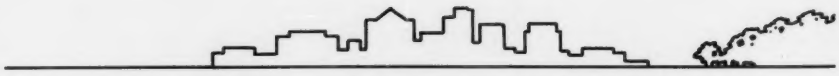


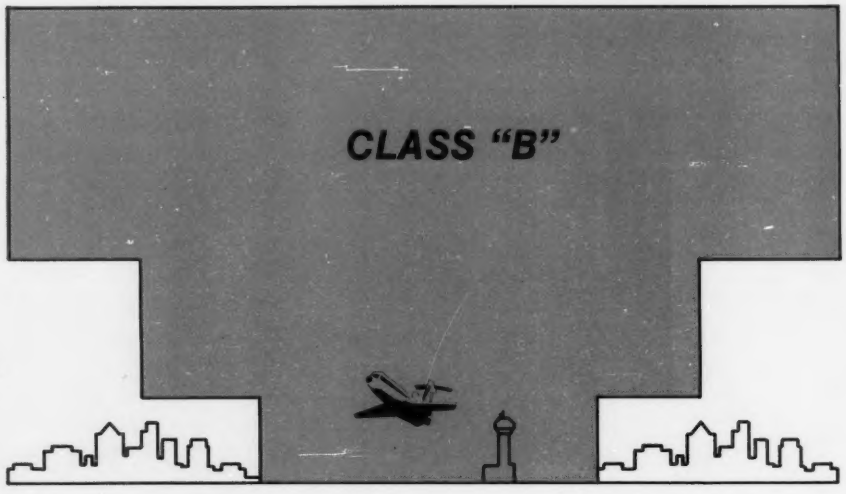
18,000′ MSL

OPERATIONS:
- IFR Only
- Two-way Radio Communications
- ATC Clearance

SERVICE:
- Aircraft Separation
- Safety Advisories

CONFIGURATION:
Replaces Positive Control Area, FL180 to FL600.





OPERATIONS:
- IFR, VFR and SVFR Allowed
- Transponder and Mode C
- Two-way Radio Communications
- Student Pilot Certificate*
- ATC Clearance
- VFR—Clear of Clouds/3 Miles

SERVICE:
- Aircraft Separation
- Safety Advisories

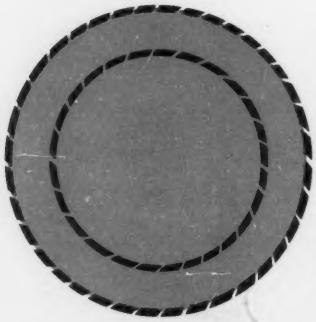
CONFIGURATION:
Identical to Current TCA's, as Shown on Charts.

*Except at some airports, CFI endorsements.

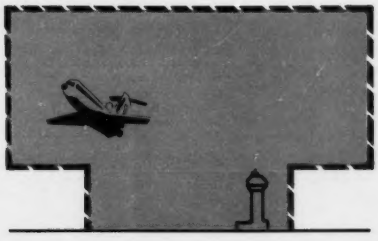
OPERATIONS:
- IFR, VFR and SVFR
- Two-way Radio Communications
- VFR—2000/1000/500 and 3 Miles

SERVICE:
- Aircraft Separation: IFR-IFR/SVFR/VFR
- Conflict Resolution: IFR-VFR
- Safety Advisories
- Traffic Advisories

CONFIGURATION:
Identical Current ARSA's, as Shown on Charts, Typically Surfact to 4,000′ AGL.



CLASS "C"



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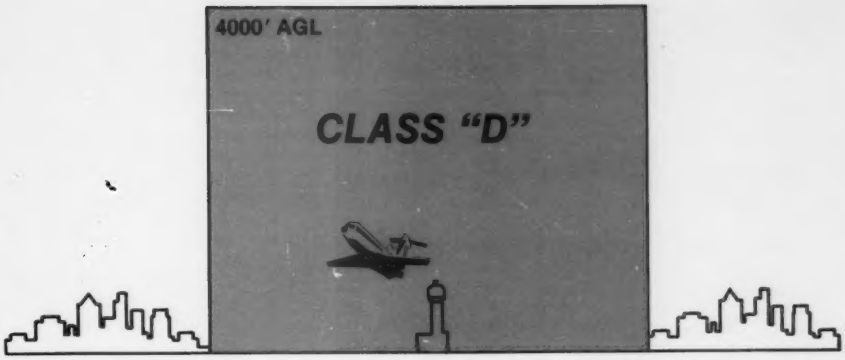
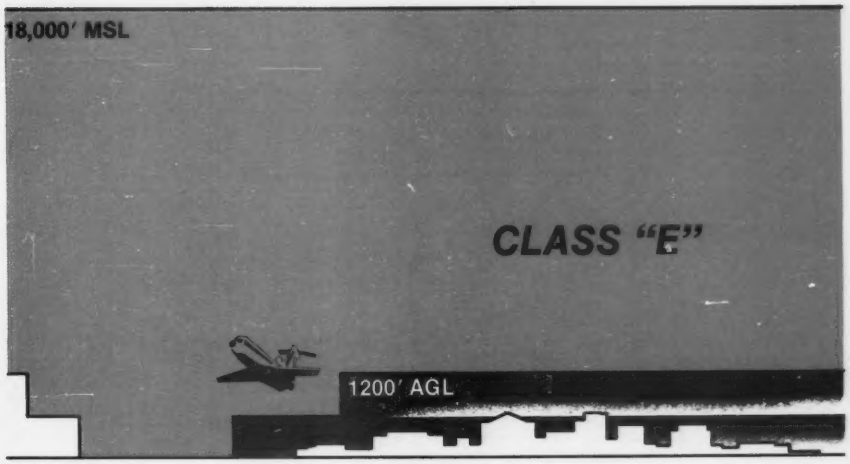


OPERATIONS:
- IFR, VFR and SVFR
- Two-way Radio Communications
- VFR—2000/1000/500 and 3 Miles

SERVICE:
- Aircraft Separation: IFR, IFR/SVFR
- Safety Advisories
- Traffic Advisories—Workload Permitting

CONFIGURATION:
Replaces Current ATA's and Control Zones (with Federal Towers), Common Ceiling at 4,000′ AGL.



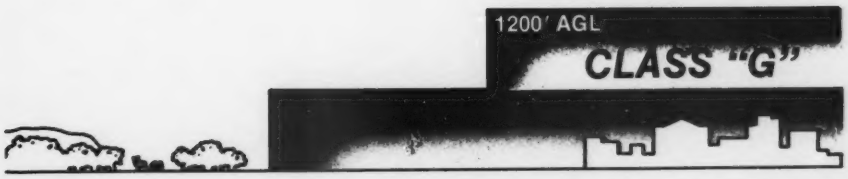
OPERATIONS:
- IFR, VFR and SVFR
- VFR—2000/1000/500 and 3 Miles/1 Mile/1000/1000 and 5 Miles (10,000 MSL)

CONFIGURATION:
Various Other Forms of Controlled Airspace (Airways, Transition Areas, etc.) Shown on Chart Between Surface (or Ceiling of Uncontrolled Airspace) and FL 180.

OPERATIONS:
- IFR and VFR
- VFR—Clear of Clouds and 1 Mile

SERVICE:
- Safety Advisories
- Traffic Advisories—Workload Permitting

CONFIGURATION:
Uncontrolled Airspace from Surface to Indicated Floor of Controlled Airspace.



(continued from page 7)

• **Airport Traffic Areas** (ATA) and **Control Zones** with Federal towers would become **Class D Airspace.** An ATA is the airspace within a radius of five miles from the geographical center of a tower-controlled airport, extending from the surface up to 3,000' AGL. Aircraft may operate IFR or VFR. IFR pilots are required to obtain ATC clearances.

Traffic separation is provided to IFR traffic only; all traffic receives traffic advisories and, upon request, conflict resolution instructions. Two-way radio contact is required for all aircraft.

Airport Traffic Areas are typically colocated with a **Control Zone,** which extends upward to 14,500' MSL, with various lateral extensions as needed. VFR aircraft operating above the ceiling of the ATA in VFR weather (three miles visibility, distance from clouds 2,000' horizontally, 1,000' above, 500' below) are not required to contact the control tower.

In the proposed reclassification, Control Zones with a Federal control tower and colocated with an ATA would also be classified as **Class D Airspace** and the common ceiling would be at 4,000' AGL. All aircraft in Class D Airspace would have the same operating requirements at all times; i.e., two-way radio and compliance with ATC clearances.

• **Controlled Airspace,** other than the preceding types of airspace, would become **Class E Airspace.** This would include the Continental Control Area (between 14,500' MSL and 18,000' MSL), control zones without air traffic control towers, transition areas, Federal airways, etc. Operations may be IFR or VFR, with separation provided for IFR aircraft only. Traffic advisories are available, as far as practical, to aircraft operating VFR. No operational requirement changes are anticipated.

Uncontrolled Airspace would become **Class G Airspace.** Uncontrolled airspace begins at the surface, except as indicated on charts, where controlled airspace is designated to the surface. The ceiling is usually at 700' AGL (magenta shading on charts) or 1,200' AGL (blue shading). Radio capability is not required. ATC separation service is not provided. However, traffic advisories may be available, conditions and workload permitting. VFR weather minimums during daylight are clear of clouds and one mile visibility (at night three miles visibility, and 2,000' horizontally from clouds, 1,000' above and 500' below).

No changes are proposed for this airspace.

Further details regarding the proposed six alphabetical classifications of airspace are displayed on pages 8 and 9. A concise **summary may be found here below. Copies** of the complete rule may be obtained without charge from FAA, APA-200, Washington, D.C. 20591, or by calling (202) 267-3484. Request Notice No. 89-28, Airspace Reclassification.

Persons who wish to comment in writing on the proposal should send their views to FAA RULES DOCKET, AGC-204, Docket No. 24456, Washington, D.C. 20591. The deadline for receiving comments is April 18, 1990.

TABLE 1—Airspace Class Summary

AIRSPACE ATTRIBUTES	A (PCA)	B (TCA)		C (ARSA)		D (ATA)		E		E		G	
Altitude Range	180-600	SFC-		SFC-40 AGL		SFC-40 AGL		SFC-100		100+ ABV		SFC-12	
Operations Allowed	IFR	IFR	VFR	IFR	VFR	IFR	VFR	IFR	VFR	IFR	VFR	IFR	VFR
Entry Prerequisites	ATC clearance	ATC clearance		ATC clearance for IFR ops. Radio contact for all operations.		ATC clearance for IFR ops. *Radio contact for all operations.*		ATC clearance for IFR ops. None for VFR operations.		ATC clearance for IFR ops. None for VFR operations.		None	
Aircraft Separation	All	All		IFR, SVFR, & Runway operations.		IFR, SVFR, & Runway operations.		IFR, SVFR		IFR		None	
Conflict Resolution	N/A	N/A		Between IFR and VFR operations.		NO		NO		NO		NO	
Traffic Advisories	N/A	N/A		YES		Workload permitting		Workload permitting		Workload permitting		Workload permitting	
Safety Advisories	YES	YES		YES		YES		YES		YES		YES	
Minimum Pilot Qualifications	Instrument	*Student**		Student		Student		Student		Student		Student	
Two-way Radio Comm.	YES	YES	YES	YES	YES	YES	*YES*	YES	NO	YES	NO	NO	NO
VFR Minimum Visibility	N/A	3 miles		3 miles		3 miles		3 miles		5 miles		1 mile	
VFR Minimum Distance From Clouds	N/A	*Clear of clouds*		2,000 feet horizontally, 1,000 feet above, and 500 feet below.		2,000 feet horizontally, 1,000 feet above, and 500 feet below.		2,000 feet horizontally, 1,000 feet above, and 500 feet below.		1 mile horizontally, 1,000 feet above, and 1,000 feet below.		Clear of clouds	

☐ New Requirement

*Except at some airports. CFI Endorsement.

Famous Flyers

The Grumman Gander Gambit

In the summer of 1936 five members of the Long Island Aviation Country Club compiled a list of characteristics for the ideal personal transport plane. It would be small, yet large enough to carry family and luggage. It would be durable and rugged, but would also be comfortable and easy to fly, and, most importantly, it would be able to go anywhere. With these specifications in mind, the five New York businessman approached aircraft designer and builder Leroy Grumman, who was intrigued by the idea.

Grumman's solution to this challenge was introduced in May 1937 as the G-21. Previously Grumman had built amphibians for the U.S. Navy and Coast Guard. The G-21 was the Grumman Aircraft Engineering Corporation's first commercial design. This "stylish, but sturdy" amphibian with its conventional landing gear was at home on the land, water, or air. The all metal construction (only the aft wing panels were fabric covered for easy access to the internal structure) had a watertight hull which could carry eight persons. Powered by a Pratt and Whitney *Wasp Jr.* engine, it was considered a reliable, well-balanced aircraft with ample power. The 220 gallon fuel tank gave a range of 800 miles at a cruising speed of 180 mph (maximum speed was 201 mph). Of course the cabin was not pressurized, so a pilot would not be able to fly above weather over 10,000 feet for extended periods of time.

As one aviation magazine said, "It was truly a private owner's ideal, if he were in a position to disregard the expense." Which brings us to the only negative thing about this aircraft: the price tag was $60,000 (about half a million 1990 dollars).

The U.S. was still in the grip of the 1929 economic depression and the "Model T of the air," an inexpensive, easy to operate aircraft was still a dream. Only the wealthiest buyers could afford to pay the kind of money Grumman was asking for their airplane (which soon went up to $66,000). So it is not surprising that the *Goose* (as it affectionately became known) was soon considered the limousine of the air. More than 20 were sold within the first year.

Air yachting (the Thirties term for jetsetting) for business and pleasure soon became the vogue. Long Island Sound mansions soon sprouted hangars that were housing the G-21's of department store heir Marshall Field II, capitalist Cornelius Vanderbilt Whitney, and banker Henry S. Morgan. A *Goose* waddling up the conveniently placed East River ramp at Wall Street was a common sight, as these wealthy commuters found they could reach their offices within minutes of leaving Long Island waterfront homes.

One observer, accompanying banker Henry S. Morgan and his wife on their morning rounds, wrote, "The Morgan family were all at the scene of their first appointments only 15 minutes after they had left the breakfast table (on Long Island)! That is commuting in the modern manner."

(continued on page 16)

Opportunity is Knocking for Aviation Careers

What does the decade ahead hold for young men and women interested in aviation as a career?

A generation ago the road that led to the cockpit of a commercial air carrier provided tough sledding for most civilians. The preferred candidates were ex-military pilots, for obvious reasons. The Department of Defense's lengthy and expensive process of selection and training was on a higher par than most carriers could afford. Furthermore, the military flight experience instilled an invaluable discipline. The Korean/Vietnam wars tended to create a large reserve of battle-trained aviators. Later, when these airmen were faced with removal from flying status at a relatively youthful age, they were only too eager to extend their career status aloft by moving into a civilian flying job, as captain, first officer or flight engineer.

Those circumstances have changed radically, and in fact the 1990's appear to offer civilians some of the best opportunities in aviation that we have seen since the expansion of commercial air travel after World War II. In testimony given to the United States Senate Commerce Subcommittee on aviation last year, FAA officials stated bluntly that "... we may be facing a shortage in the numbers of adequately trained personnel available to staff our future civilian fleet."

One of the warning signs cited was the fact that 1988 was the first year in which U.S. scheduled air carriers hired more pilots from general aviation than from the military services. Furthermore, the pool of general aviation pilots is known to have been shrinking in recent years, due primarily to the high costs of training, aircraft ownership and use.

At the same time, the de-regulation of air carriers in the late 1970's has been followed by a great expansion of air carrier services. A 1989 report by the National Defense Transportation Association predicts that U.S. airlines will have to hire 53,000 pilots over the next ten years, to meet increased air travel demands and replace flight deck retirees. At the present rate of training, it was estimated, there will be only 41,000 qualified pilots available.

These prospects exist in spite of the fact that the U.S. Air Force is losing pilots to civilian life faster than it can replace them, according to recent Defense Department testimony in the Senate. Special career incentives are being considered to retain pilots in military service. Any such move, of course, would further reduce the pool available to airlines.

In spite of the improving job prospects in

aviation, the number of civilians learning to fly is still declining, according to FAA statistics. Over the period 1978-1987, FAA figures show a peak drop-off of 26 percent in the issuance of student, private, and commercial pilot certificates. This means fewer pilots who will become eligible to train for airline transport pilot positions.

Commuter and regional airlines—which have multiplied since de-regulation—are most directly affected by this reduction in the pilot population. Regional carriers depend heavily on general aviation for new hires, since pilots with military experience can usually move directly to a major airline.

The commuter airlines have an even more difficult time *retaining* pilots than hiring them, once they gain enough experience to be of interest to a major carrier. Some 40 percent of commuter pilots must now be replaced every year. Several smaller carriers report replacing as many as 120 percent of their pilots over a 12-month period.

The large airlines are temporarily keeping up with hiring needs although the experience level of new hires—particularly with regard to jet time—is not as high as it once was. They report informally a current pool of about 6,000 job applicants, although conceding that this number may be inflated somewhat as a result of multiple applications. Most experts say the real crunch in pilot availability is two to three years away, leaving precious little time to resolve the problem.

Many initiatives to deal with the perceived future shortage already are underway. One example is FAA's establishment last year of the Recreational Pilot's Certificate as a new, lower-cost alternative for obtaining basic flying credentials and experience in the cockpit. The agency projects that as many as 7,000 additional pilots per year may be encouraged to begin flight training thanks to the availability of this certificate, with some of these pilots moving on to pursue higher ratings.

Another innovation aimed at reducing the high cost of flying is the proposed rule to establish a category of "primary aircraft," which would be less expensive to build and certificate. Final action on the proposal is expected in 1990.

FAA also has undertaken a sweeping reassessment of pilot training and certification requirements at both the general aviation and commercial levels. These efforts are aimed at promoting "innovation and flexibility" in pilot training, important factors in assuring an adequate pool of qualified pilots.

A key area of rule re-examination is flight hour requirements. The question being asked is, is the number of hours in a pilot's log book the only—or even the best—measure of his or her competence? Should quality of training and experience be given equal weight?

An example of this philosophy is FAA's proposed Advanced Qualification Program for airline pilots that relies heavily on the use of advanced training technology. The focus of this program is on ensuring actual proficiency in performing tasks, rather than on an arbitrary prescribed number of hours of experience. The program also has a heavy emphasis on cockpit resource management.

The nation's colleges and universities also are stepping in to help counter the anticipated pilot shortage. Nearly 400 centers of higher education now offer aviation education and/or flight training programs.

The "ab initio" training concept has been practiced successfully by the military for many years. The key to its success is to provide, from the beginning, the kind of training that would assure competency as a particular type of pilot, such as combat or airline pilot. Many foreign airlines also have adopted this approach because they lack either the military or general aviation pilot resources that have traditionally supplied U.S. carriers.

Still, the cost of pilot training remains a major barrier to young people seeking an aviation career.

Typically, a student will spend at least $25,000 in the basic course, but must face a cap on student loans as low as $2,500 per year. This has led to industry recommendations that the cap be raised for qualified aviation trainees, as has been done for medical students, who can get financial help up to $50,000 a year.

Congressional legislation in November of 1989 included a provision to reinstate flight training benefits for veterans and members of the Selected Reserve. Under the new law, the Government would pay 60 percent of student reimbursement costs, up to a $10,000 cap, for pilots intending to pursue an aviation career.

The pilot shortage isn't the only people problem worrying airline executives these days, however. The maintenance side of aviation suffers from the same shortage of personnel resources. A survey of 21 of the largest carriers reveals current openings for 4,000 mechanics or technicians.

This shortage is expected to become more critical in coming months and years, due to the increased maintenance requirements of FAA's *aging aircraft* programs, as well as to the agency's requirements for installation of new equipment, such as the traffic alert and collision avoidance system (TCAS) and the windshear warning and *escape path* flight guidance system.

Industry, government, and academia all agree there is no easy fix for the shortage of pilots and maintenance professionals. However, FAA is committed to working with the aviation community and the academic community to promote a program which will encourage young people to learn to fly and which will offer the best training possible to ensure a highly qualified pilot community.

The rest is up to you.

Re-awakening the Dream

AvNEWS

GIGANTIC JAWS. The Soviet-built An124 *Ruslan* opens its cavernous forward hatch to swallow a 110 ton printing press, including a print drum roll with dimensions of more than 1,870 cubic feet. The machinery was flown from Helsinki to Melbourne, Australia. The *Ruslan* is similar to, but larger than, the U.S. military KC-5 and the commercial B-747.

WARNING AREAS EXTEND TO 12 MILES OFFSHORE

Special Federal Aviation Regulation, (SFAR) No. 53-1, has extended until December 27, 1990 the effectiveness of temporary regulatory Warning Areas over the offshore waters between three and twelve miles from the U.S. coast.

These Warning Areas were initially established by SFAR 53, issued pursuant to a Presidential proclamation extending U.S. jurisdiction to 12 miles from its coastline.

(A Warning Area is airspace in which hazardous military flight activity may take place, when coordinated with Air Traffic Control with regards to the movement of civil aircraft in the area.)

Civilian pilots flying through such designated warning areas should be careful to contact ATC before entering the area.

MLS WEATHER MINIMUMS

FAA has awarded a contrast to study pilot performance in completing simulated instrument approaches to Category 1 runways with weather minimums reduced below the current standards, utilizing the new Microwave Landing System (MLS).

The study will be carried out by Flight Safety International, at their Wichita, KS, training center, using a *King Air 200* simulator. Manual approaches will be flown by some 40 pilots selected by FAA, mostly from regional airlines.

This is one of several studies being undertaken by FAA to evaluate potential advantages of MLS over the present Instrument Landing System in the United States.

TCA HELICOPTER RULES

FAA has postponed until October 1, 1990, the effective date of recent rulemaking that requires VOR/TACAN navigational equipment for helicopters (as well as all other aircraft) operating in a Terminal Control Area (TCA). This delay will allow the agency to consider a proposed rule that would eliminate the requirement for VOR/TACAN for aircraft operating VFR in a TCA.

For information on this subject and a copy of "Terminal Control Area (TCA) Classification and TCA Pilot and Navigational Equipment Requirements" (Docket No. 25304, Amendment No. 91-214) contact FAA Public Affairs, Attn: APA-230, Washington, DC 20591 or phone (202) 267-3484.

AIRWORTHINESS ALERTS

More than 330 Continental T510-520BE piston engines installed in PIPER *Malibu* aircraft must be inspected for improper crankcase through-bolt torque, in accordance with an emergency airworthiness directive issued by FAA. Improper torqing could allow the No. 2 crankshaft main bearing to shift, possibly causing engine failure.

Continental is offering to replace an affected engine, on a pro-rated basis, with a factory rebuilt powerplant.

FAA has issued this Alert Notice about a pilot-reported incident involving Narco R-nav NS-800 and NS-801:

"Under certain conditions, the R-nav bearing suddenly jumps off about 50 degrees. This occurred using the BUJ VOR (114.9 MHZ) 350 degrees radial at 39.5 nautical miles to establish a waypoint at DUA airport. When on any radial from BUJ between 290 degrees and 350 degrees and the distance from BUJ less than 39.5 nautical miles, the bearing jumped approximately 50 degrees. (The submitter stated the bearing jumped from 058 degrees to 008 degrees). This condition was duplicated on the test bench using two new NS 800 R-nav units and one used NS 801 R-Nav unit.

"Narco Service Bulletins NS 800 No. 1 and NS 801 No. 1 addressed replacement of defective software for these units. The manufacturer considers these Service Bulletins mandatory for any units listed in the Service Bulletin."

ROTORCRAFT HARNESSES

To enhance the safety of the crew and passengers, FAA has issued a notice of proposed rulemaking to require the installation and use of shoulder harnesses at each seat, regardless of orientation, in normal and transport category rotorcraft.

If the rule is adopted, U.S. civil rotorcraft manufacturers will have one year after the new rule is published in the *Federal Register* to comply, regardless of the original type certificate basis. FAA believes this will give manufacturers enough time to design, fabricate, and install shoulder harnesses to meet the requirements. Foreign manufacturers will be required to comply with the certification standards of Part 27 and 29 as a condition of entry to the U.S. markets.

For a copy of the proposal, "Airworthiness Standards; Shoulder Harnesses in Normal and Transport Category Rotorcraft" (NPRM 89-32, Docket No. 26078), contact the FAA Office of Public Affairs, Attn: Public Inquiry Center, Washington, DC 20591, or phone (202) 267-3484. Deadline for comments is June 6, 1990.

CONTACT LENS CAUTION

The Office of Aviation Medicine is directing the attention of pilots who wear contact lenses to a potential hazard in using homemade saline solutions, which could lead to damaged vision.

The Food and Drug Administration (FDA) has cautioned that homemade saline solutions, generally prepared by dissolving salt tablets or capsules in distilled water, are nonsterile and may become contaminated by bacteria and other harmful microorganisms, which cause eye infections. These infections are painful, may be difficult to treat, and could even cause blindness.

Most importantly, pilots are advised to adhere strictly to the lens care procedures provided by their eye specialist.

• Solo P.I.C. Without Rating?

I request information on the following situation:

The pilot has a Commercial/Instrument Single Engine/Land Airplane Certificate, and is training for the multi-engine rating. The pilot is signed off by his instructor to solo in a multi-engine airplane. My question is, can the pilot log P.I.C. time in the multi-engine plane when flying as the only occupant?

If this is pilot-in-command time can it be counted toward the 15 hours required by FAR §61.191(b)

Lyle Mortenson
New York

FAR Section 61.51(2)(i) states that a private or commercial pilot may log as flight time "only that time during which he is sole manipulator of the controls for an aircraft for which he is rated, or when he is the sole occupant of that aircraft ..." It would seem that the answer to both of your questions is affirmative.

• On Slippery Ice

A pilot is informed that the runway is completely ice-covered and that braking action is zero, but he still elects to land on it. Even if there is no accident, could this action be considered to be "careless or reckless operation" (FAR §91.9)? Would it make a difference if he were carrying passengers?

Name Withheld

If an FAA inspector became aware of such an incident, it would be his responsibility to investigate it. Whether or not any enforcement action would be taken depend on the exact nature of the circumstances.

• Captionless Cartoon

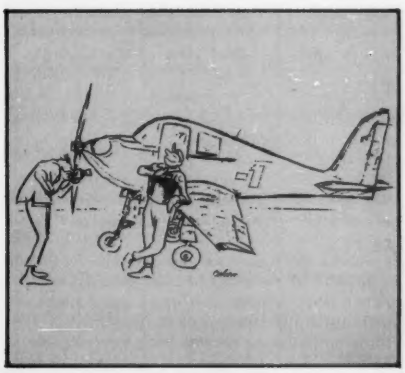
Oh, I get it. We're supposed to guess the caption under the cartoon on the back cover of the September/October 1989 issue.

Okay, here's my entry: "When your flight is finished, be vigilant still and stay well clear, for a hot prop can kill."

Do I win?

Steven M. Denenberg
Omaha, NE

The cartoon was intended to illustrate the "Bathing the Birdie" article, but we will accept your caption.



• Safety Pilot VS. S.I.C.

I need a clarification on logging second in command time. When two private pilots are together in a plane (Cessna 150) which only requires one pilot, and the left seat pilot is flying simulated instruments, does the right seat pilot log any time? It's difficult to ascertain from the FARs. One interpretation is that the plane requires a second in command while the pilot is on instruments. Is this right?

I appreciate any assistance with this topic.

Peter Vines
Earlysville, VA

Under the provisions of FAR §91.21(b)(1), no person may operate a civil aircraft in simulated instrument flight unless an appropriately rated pilot occupies the other control seat as safety pilot. Since the latter pilot is a required crewmember SIC flight time may be logged for that time during which he/she acts as safety pilot. SIC flight time may be counted toward the pilot's total flight time.

Double Negatives Out?

My pique with FAA regulations is the clumsy way they seem to have of wording regulatory matters. For example, in the September/October 1989 issue, on page 15, lower right-hand column, is this statement:

"No person who is not instrument rated (current and qualified for the aircraft) can act as PIC of an aircraft that is on an IFR flight plan."

More of your readers would probably understand the point on their first reading if the sentence had been written thusly:

"A person who is not instrument rated (current and qualified for the aircraft) cannot act as PIC of an aircraft that is on an IFR flight plan."

Stanford W. White
Walnut Creek, CA

Our statement, which you quote, is a summarization in part of FAR §61.57, in order to emphasize a given situation. Probably our use of the double negative makes it sound awkward. FAR §61.57, however, is much too complex to be reduced to a single sentence regardless of how it is worded.

We give you an "A" for effort.

• Out-Study CFI Renewal?

I note that FAR Section 141.79(c) requires each chief flight instructor at a Part 141 approved flight school to complete a refresher course every 12 months, consisting of not less than 24 hours of ground or flight instruction, or both. Does the Jeppesen Sanderson "out-study" FIRC program, conducted under §61.197(c), satisfy the §141.79 requirements?

Name Withheld

A chief flight instructor who can show satisfactory completion of at least 12 hours (i.e., four complete quarters) of the Jeppesen home study program within the past 12 months may credit those 12 hours toward the Section 141.79(c) requirement. These 12 hours must be supplemented with an additional 12 hours of instruction deemed acceptable by the FAA.

FAA AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA AVIATION NEWS, AFS-20, Washington, DC 20591.

• Instrument Grouping

In the last eight years, I have helped to modify ten older GA aircraft analog instrument panels by installing new or used instruments and avionics. The result was a much more usable, logical arrangements of instruments with superior digital readouts.

Owners of these aircraft were instrument students of mine. With their standardized instrument panel and new avionics these students quickly learned ATTITUDE instrument flying. In my opinion, for their average 200 hours of flying, they demonstrated a much superior flight proficiency than many pilots who had logged 1,000 hours.

I strongly recommend such instrument modification, in the interests of quicker learning and more recognizable reference.

Col. Bob Erbe
Riverside, CA

• Practice Instrument Approach

While reading another publication, a discussion of practice instrument approaches left me with a question. According to the article, it appears that anyone flying a practice IFR approach at an uncontrolled field would be in violation of FAR §91.79(c) if they were to descend below 500 feet AGL without the intention of landing.

In researching this matter, I looked at the AIM Par 244 re: practice approaches, Par 232, & Par 157 (f)4. Also under FAR §91.87(d)3 it appears that you may descend below certain altitudes for the purpose of remaining on the glideslope.

So here are my questions. At a tower or non-tower field, is it permissible to descend below 500 feet AGL on a low approach for the purpose of practicing instrument approaches to the DH, in the case of a precision approach, or to the MDA on a non-precision approach?

Robert J. Grinch
Ridgewood, NJ

Whether the airport is tower controlled or not, a pilot practicing an instrument approach with no intention of landing should not plan to descend below 500 feet AGL, unless the approach is over water or a sparsely populated area. Note also (AIM #244) that prior approval to such an approach must be obtained from approach control, and radio contact maintained.

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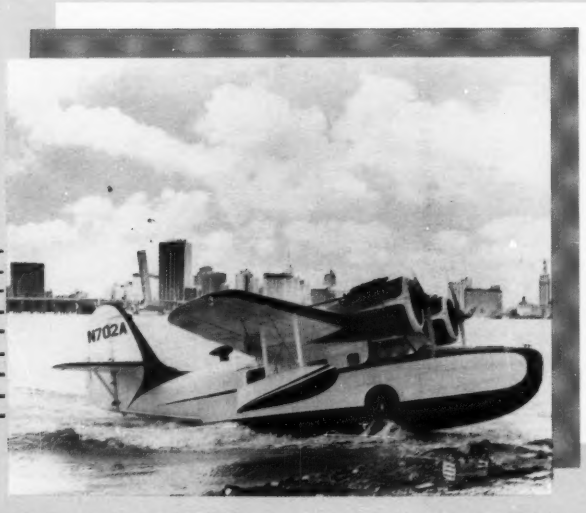

(continued from page 11)

Each G-21 was custom-tailored to fit the needs and pocketbooks of the intended owner. The buyer had a choice of the standard double row seats or could go for the luxurious "club" look. A food preparation galley and a lavatory were typically included, but a full-length folding bed could be installed, as it was for one businessman who made many overnight trips. The aircraft's interior often reflected the era's fascination with new materials, such as linoleum floors and Formica paneling, making the interiors more utilitarian than the more ornate private railroad cars with their gilt inlays.

The versatility of the *Goose* soon caught the interest of oil and mining companies. They saw it as a reliable and faster means of transportation to explore remote, underdeveloped areas, as the amphibian was capable of setting down on any accessible body of water or cleared land. Another plus was the fact that the *Goose* was considered an especially safe aircraft. It could land at a speed of 62 mph, slow enough for an amateur pilot to handle, and if a crash did occur the hull was sturdy enough to protect the passengers.

With the dawn of World War II the *Goose* again proved its usefulness when it was pressed into military service. The *Goose* was soon put to work doing anti-submarine patrols, aerial photography, target towing, water rescue, and as an air ambulance.

By 1945 a total of 345 G-21's had been built. At this point Grumman decided to stop production and concentrate on larger, more modern amphibian designs for a broader market. When the military *Goose* fleet was surplused after the war, they were quickly snatched up at low prices by pilots who realized they would be perfect for short haul or commuter airline use. The demand for air travel had increased with war's end, and the *Goose* was now affordable.

No longer the "aerial limousine" of the wealthy, it became now a hard-working hauler of passengers and freight at locations of difficult access all over the world. Today only a few of these venerable birds are still flying (52 are of U.S. registry), mostly in rugged backcountry areas of Alaska. The days of the *Goose* proudly waddling up the ramp at Wall Street are just a distant memory, but an immaculate example of this historic aircraft can be seen by visitors to the Smithsonian Institution's National Air and Space Museum in Washington, DC. The Smithsonian recently opened a new exhibit called "Commuting in the Modern Manner: The Grumman Goose Amphibian." ■